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ABSTRACT

This study attempts to determine whether stated behavioral objectives, learner activities, and self-pacing increase both learner input into instructional decision making and comprehension as well as improve attitude. The subjects for the study were drawn from three sections of a principles of communication course which were all taught by the same professor. While subjects in the experimental group obtained significantly higher compression scores than did subjects in the control condition, subjects within the learner-input group did not significantly outscore the no-learner-input group and subjects who were allowed learner input did not have better attitudes toward the instructional task than did subjects within the no-learner-input group. It was concluded that although learner input seems to hold considerable promise for the field of educational research, its potential contribution to the more general science of communication is not significant. (A lengthy review of the literature is included). (RB)

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THE EFFECTS OF LEARNER INPUT ON COMPREHENSION AND ATTITUDE TOWARD TASK

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THE EFFECTS OF LEARNER INPUT ON COMPREHENSION AND ATTITUDE TOWARD TASK

Since the early 1920's a great deal of energy has been expended on research into the effects of teaching methods. Though insignificance has generally characterized the results of such research (McKeachie,1970), educators continue to search for more efficient instructional methods. After half a century, the search is still on for an instructional method which consistently provides high learner achievements and positive learner attitudes.

The student-centered philosophy of Dewey (1914; 1916), the group dynamics of Lewin (1948), the non-directive counseling techniques of Rogers (1951), and the individual differences findings by Gagne (1967) indicate that learning outcomes should increase when students are encouraged to take an active part in instructional decision-making. Many researchers have tested various aspects of this hypothesis with generally positive results (Mager and Clark, 1963; Mager and McCann, 1961; Miles, Kibler, and Pettigrew, 1967).

Speech educators have generally been active contributors to comparative teaching methods research. Thompson (1967) reviewed numerous studies which compare teaching methods in the speech communication classroom and concluded that no one method is better than any other. More recently, a few speech communication educators have advocated certain innovations which are designed to offer more opportunities for students to make decisions concerning the instructional situation (Sprague, 1971). However, there is a lack ofpublished experimental studies which investigate the effects of such innovations in the speech communication classroom.

The general education literature is replete with conceptual discussions and evaluative studies of increased learner decision-making. This study is an attempt to fill theneed for controlled, experimental investigations of this variable. Judd (1971) expresses thisneed when he concludes that

> small, well-controlled laboratory studies of relevant control options in which specific performance measures are examined, are required prior to any generalizations concerning the utility of learner control in practical instructional programs. (p. 11)

This study was an attempt to respond to the following general research question: Within the speech communication paradigm, what are the effects of increased learner input into instructional decision-making? More specifically, this study investigated the effects of learner input into instructional decision-making on comprehension and on attitude toward task.

RATIONALE

Opportunities for students to make instructional decisions, a condition here designated as learner input, have been provided in numerous

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instructional programs, all of which seem to include at least one of the following components: (1) stated behavioral objectives, (2) alternative learning activities, and (3) self-pacing opportunities. Investigations of each of these components indicate generally positive effects on comprehension and/or attitude toward task.

Though speech communication educators have long advocated personalized approaches to individual improvement (Barnes, 1952), very few have utilized learner input within the speech communication classroom. A few speech educators have recognized the importance of behaviorally stated objectives. Kibler, Barker, and Cegala (1970) propose a rationale and defense oftheir value in speech education. Tucker (1973) and Haynes (1973) further explicate methods for the formulation and use of behavioral objectives. Baker (1967) and Gruner (1968) discuss theuse of such objectives in evaluating speech performances. Indications arethat such objectives are demanding more attention from speech educators; however, as Tucker (1973) indicates, the literature does not indicate extensive use of such objectives in the speech classroom. Though the use of performance options is familiar, there has been little published in the speech communication education literature which suggests any other use of alternative learning activities. Sprague (1971) suggests that alternative or optional activities be offered to students of speech communication. Though there are programmed texts available (Gibson, 1971; Haynes, 1973), there is little indication that speech communication educators have made a significant attempt to compensate for differing rates of learning.

Few studies investigate more than one of the three components which are specified in this study as requisites to the conditions oflearner input. So theliterature generally falls into three categories, each corresponding to one of the components of learner input. Each will be reviewed independently.

Gagne (1969) postulated that informing students of behavioral objectives at the beginning of an instructional unit should increase desired learner outcomes because they (1) inform the learner of the performance expected of him, (2) stimulate recall of subject matter, and (3) guide the learner's thinking. Mager (1962) agreed:

> With clear objectives in view, the student knows which activities on his part are relevant to his success, and it is no longer necessary forhim to 'psych out' the instructor.

Empirical research generally supports these assertions that stated behavioral objectives will improve learner output.

For example, Mager and McCann (1961) investigated the achievement of engineering students who were given a list of specific behavioral objectives and complete control over what and how they would reach those objectives. There was not statistical analysis;however, results indicated that (1) training time was reduced 65% and (2) the students were informally evaluated as more confident and competent than previous graduates (Mager and Clark,1963). Mager and Clark (1963) described a similar study in which the experimental subjects performed almost as well as the control subjects, butrequired only half the instructional time. Miles, Kibler, and Pettigrew (1967) report the use of stated behavioral objectives in the form of study questions presented to students before three of the six study units in an introductory educational psychology course. Results of a fifty-question multiple choice test over each of the six units revealed the superiority of the groups who had had the

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study questions. An analysis of the variance indicated the difference among the means as statistically significant at the .001 level of confidence. A subsequent post hoc analysis between each pair of groups indicated that all three study question groups were significantly superior to all three groups which were not proveded with study questions ($p < .05$).

Other findings have strengthened the general direction of these results. Olsen and Lockard (1972) found that prior knowledge of behavioral objectives in ninth grade physical science results in greater achievement on a standardized achievement test, "Interaction of Matter and Energy" (Rand McNally & Co.) and in greater retention. The experimental treatment resulted in overall mean differences significant at the .01 level of significance. An unpublished masters thesis (Engel, 1968) reported significantly higher scores on achievement tests if math students were told in advance the objectives for each activity (Cook, 1969). Kaplan and Rothkopf (1972) studied the effects of four characteristics of instructional objectives upon intentional and incidental learning. They found, among other things, thatspecifically stated objectives produce greater learning (intentional and incidental) than generally stated objectives. At least one researcher, Cook (1969), reported no significant differences (at the .05 level of confidence) between instruction with and without stated instructional objectives. At least one researcher, Cook (1969), reported no significant differences. However, Cook (1969) did report significant differences in rates of forgetting, as did Olsen and Lockard (1972).

Few published studies utilize alternative learning activities as an independent variable, and most of these studies investigate the relative effectiveness of independent study programs and traditional classroom procedure. For example, Himmel (1969) compared student outcomes from an independent study experience to those from a more structured learning experience. He found no significant difference in comprehension or retention, but the students who had studied independently were judged (by a two-page opinion blank) to have a more favorable attitude toward the teaching-learning method. Judd (1971) investigated learner control of a programmed instructional sequence in a precalculus mathematics course. He reported no significant difference between posttest scores of the experimental group (subjects with a great deal of control over thelearning sequence) and the control group (subjects with little control over the learning sequence). Further research is needed to confirm or refute this finding.

Very few studies investigate the relative worth of self-regulated pacing over pre-determined pacing. In the area of programmed instruction, Follettie (1961) reported significantly better learner output for self-paced programs. Three studies (Mitzel, 1962; Briggs, Plashinski, and Jones, 1955; Silverman and Alter, 1961) reported no superiority of self- over teacher- or programmer- pacing. Longitudinal studies (Education USA, 1968; University of Texas Dental Branch at Houston, 1971) which incorporate self-pacing as a part of their innovative programs endorsed self-pacing as a valuable component of their respective programs. These findings suggest the efficacy of self-pacing, but, as in the previous area, the lack of controlled experimental studies indicates the need for more research.

No one has specifically reported the effects of learner input on attitude toward task. However, several researchers have measured certain affective states which may, in turn, affect the learner's attitude toward the

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instructional task. There are indications that increased autonomy encourages learner motivation (Mager, 1961). More specifically, some researchers hypothesize that specified behavioral objectives decrease learner anxiety (Kibler, Barker, and Miles, 1970,p. 106). Those concepts--motivation and anxiety--seem to be closely related to learner attitude toward instructional task. Small group research has established that favorable member attitudes toward task and toward the situation seem to be a consequence of several factors, one of which is job autonomy--a concept comparable to learner input within the instructional situation (McGrath and Altman, 1966).

Results of previous studies investigating the three aspects of learner input--stated behavioral objectives, learner activities, and self-pacing opportunities--generally indicate that increased learner input into instructional decision-making will have positive effects on comprehension and/or attitude toward task.

SUMMARY AND STATEMENT OF HYPOTHESES

Educational systems are founded on theassumption that learning results from a systematic coverage of subject matter. Therefore, any concentrated exposure to specific subject matter should increase learner comprehension. However, educational research findings continue to establish evidence indicating that a student comes to the learning situation with more knowledge than the instructor realizes--knowledge about the subject matter and knowledge about his own capabilities. Findings suggest that if a learner knows precisely what is expected of him, he can better focus his attention and energies on achieving those objectives; thus, stated behavioral objectives should increase learner comprehension. Research has also established that students differ in their interest patterns and cognitive styles as well as in their learning abilities and that a particular learning activity should be more effective with one student than with another. Therefore, alternative learning activities should increase learner comprehension. Finally, individual differences research also tends to support the assumption that students learn at differing rates; so opportunities for self-pacing should also increase comprehension. Besides increased comprehension, findings suggest that students have more positive attitudes toward instructional tasks over which they have some degree of conteol. All these findings have encouraged the implementation of programs which provide for each student to make individual decisions as to his instructional activities and rate of learning--a condition which has been designated in this study as learner input. Programs attempting to provide learner input generally include at least one of the following components: (1) stated behavioral objectives; (2) alternative learning activities; and (3) self-pacing opportunities. Many such programs are now in progress; however, there is a startling lack ofexperimental evidence to support the efficacy of these programs. The few published studies of this variable generally indicate positive relationships between increased opportunities for learner input and increased comprehension and attitude toward task.

On that basis, the following hypotheses were derived:

H_1: Subjects within the no learner input condition will have significantly higher comprehension scores than subjects within the control condition.

H_2: Subjects within the learner input condition will have significantly higher comprehension scores than subjects within the control condition.

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H_3: Subjects within the learner input condition will have significantly higher comprehension scores than subjects within the no learner input condition.

H_4: Subjects within the learner input condition will have significantly more favorable attitudes toward the instructional task than subjects within the no learner input condition.

METHOD

Subjects

Subjects for this experiment were drawn from three sections of Communication 111, Principles of Speech Communication at Stephen F. Austin State University, during the spring semester of 1974. All three sections were taught by the same professor. Generalizability of the experiment is limited to statements about the population from which the sample was drawn, i.e., students in the Communication 111 course at Stephen F. Austin State University during the spring semester, 1974.

Independent Variable

The learner input condition included the three components described previously as necessary for learner input--behavioral objectives, alternative learning activities, and self-pacing opportunities. Each of these was operationalized as follows:

(1) The behavioral objective for the task was
At theend of this assignment, you should be able to match correctly at least twenty aspects or characteristics of communication with thei r definitions or descriptions.

(2) Each subject was encouraged to choose at least one of the following alternative learning activities:
   a. Read article only
   b. Read article and listen to taped lecture
   c. Read article and view slide presentation with thetaped lecture
   d. Do either activity "b" or "c" without reading article.
   e. Read article and participate in a small group discussion (students only)
   f. Read article and participate in a small group discussion (leader provided)
   g. Read article and participate in an individual conference
   h. Read article and additional readings
   i. Read article and answer study questions
   j. Participate in any other activity which will help you reach the objective.

(3) Self-pacing opportunities were available in that each subject might take the dependent measures at any scheduled time.

The no learner input condition included only the reading assignment and a deadline for its completion, at which time all subjects took the dependent measures.

The control condition included only an administration of the comprehension measure at a time corresponding to that in the no learner input condition.

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Dependent Variables

Comprehension was operationalized as a twenty-item matching test over the reading assignment.

Attitude toward instructional task was indicated by the evaluative dimension of Osgood, Suci, and Tannenbaum (1957), as modified by McCroskey, Young, and Scott (1972).[1]

Procedures

This section describes two aspects of the experimental procedure: the instructional task involved and the experimental and control condition.

The instructional task consisted of a twelve-page reading assignment, "A Conceptual Overview of Communications Dimensions" from Speech Communication Behavior: Perspectives and Principles, edited by Larry L. Barker and Robert J. Kibler.[2] This article was selected because the subject matter, length, and difficulty of the article were appropriate and because the authors state several behavioral objectives, one of which was adaptable to an appropriate comprehension measure.

Learner input condition. The reading assignment was presented to the subjects on the second class meeting of the spring semester, 1974. Each subject received a packet which contained

(1) an introduction
(2) the behavioral objective
(3) the alternative learning activities
(4) a laboratory schedule. A laboratory was open from 4:00 p.m. until 6:00 p.m. every school day, beginning with the second class meeting and continuing for five school days. The laboratory provided (a) an informed person to answer questions concerning procedure and/or subject matter and (b) materials and equipment necessary for learning activities. Learning activities and tests were operational only at these scheduled times.
(5) a report of learning activity choice. Each subject designated, during the second class meeting of the semester, the activity option(s) which he chose.
(6) a copy of the article.

No learner input condition. The reading assignment was presented to the subjects on the second class meeting of the spring semester, 1974. Each subject received a packet which contained

(1) an introduction and instructions
(2) a copy of the article
(3) the deadline for the assignment, which was the fifth class meeting (Monday, Wednesday, Friday classes) or the fourth class meeting (Tuesday, Thursday classes).

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[1] McCroskey, Young, and Scott (1972) indicate this instrument was initially reported by McCroskey (1966).

[2] Larry L. Barker and Robert J. Kibler, SPEECH COMMUNICATION BEHAVIOR: Perspectives and Principles, (C) 1971. Reproduced by permission of Prentice-Hall, Inc., Englewood Cliffs, N. J. No further reproduction is permitted.

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Control condition. Subjects received only the dependent measures at a time corresponding to that for the no learner input condition.

During the experimental period, no out-of-class assignments were made in any ofthe three sections. The dependent measures were administered, for the learner input condition, at any of the scheduled times; for the other two conditions, on the fourth class meeting (Monday, Wednesday, Friday classes) or the fifth class meeting (Tuesday, Thursday classes).

Data Analysis

An after-only experimental design was utilized. Three sections of Communication 111 were randomly assigned to one of three conditions described above. The mean squares within, as derived from an analysis of variance, were used as the variance pooled when applying the appropriate t-tests.

RESULTS

Hypotheses Testing

A 1x3 analysisof variance for the comprehension scores and a 1x2 analysis of variance for the attitude scores were conducted.[3] These analyses established the mean squares within, which were subsequently utilized, as a better estimate of the variance, in place of the variance pooled protion of the t-test. The .05 criterion was established.

H_1: Ss within the no learner input condition will have significantly higher comprehension scores than Ss within the control condition.

On the basis of theresults indicated by statistical analysis, the null hypothesis was rejected. Table 1 indicates the mean scores associated with this hypothesis. A t value of 3.2983 indicated significantly higher comprehension scores of theno learner input group than those of the control group ($p<.05$, $t=1.696$, $df=32$).

Table 1

Mean Scores from Dependent Measures

		Comprehension	Attitude
Learner Input Condition	N=17	9.8824	29.8235
No Learner Input Condition	N=17	9.6471	32.0000
Control Condition	N=17	5.8824	--

H_2: Ss within thelearner input condition will have significantly higher comprehension scores than Ss within the control condition.

Results of the statistical analysisindicated the rejection of the null

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[3] The 1x3 Analysis of Variance on comprehension scores indicated a significant main effect for groups of 7.736 ($p<.05$, $F=3.23$, $df=2,48$). The 1x2 Analysis of Variance on attitude scores did not indicate a significant main effect, yielding a value of 0.826 ($p<.05$, $F=4.17$, $df=1,32$).

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hypothesis in this case also. Table 1 reveals the mean scores associated with this hypothesis. A t value of 3.5045 indicated significantly higher comprehension scores of the learner input condition than those of the control condition ($p<.05$, $t=1.696$, $df=32$).

H_3: Ss within the learner input condition will have significantly higher comprehension scoresthan Ss within the no learner input condition.

On the basis of the results of the statistical analysis, the null hypothesis could not be rejected. Mean scores associated with this hypothesis are found in Teble 1. A t value of 0.2062 indicated no significant difference in comprehension scores between the learner input group and the no learner input group ($p<.05$, $t=1.696$, $df=32$).

H_4: Ss within the learnerinput condition will have significantly more favorable attitudes toward the instructional task than Ss within the no learner input condition.

On the basisof the results of statistical analysis, the null hypothesis could not be rejected in this case either. Mean scores associated with this hypothesis are indicated in Table 1. A t value of 0.9087 indicated no significant difference in attitude scores between the learner input and no learner input groups ($p<.05$, $t=1.696$, $df=32$).

Participation Analysis--No Learner Input Condition

On the initial day ofthe study, each of the seventeen subjects within the learner input condition indicated that he or she would participate in at least one of the suggested learning activities (see Table 2). A number of Ss volunteered for activities which required outside meetings (slide or lecture presentations, group discussions, or individual conferences). Eleven subjects indicated that they would participate on an individual basis (readings or study questions). No one signed up forlearning activity "D" (slides or lecture without the article).

The actual participation records indicate that fifteen of these learner input subjects didnot participate as they had indicated they would. Seven subjects did not participate ina learning activity at all (beyond simply reading thearticle), and four of them participated in more or different learning activities than the ones they had previously indicated.

With regard to the self-pacing opportunities operationalized as a component of learner input, it should be noted that no subjects chose to take the dependent measure before the deadline. All Ss participated in the group administration of the dependent measures during the regular class period one week following the introduction of the experimental treatment.

Table 2
Distribution of Volunteers and Participants
in Learning Activities

Learning Activity	Volunteers*	Participants
A. Read article only	3	data not available
B. Lecture	2	1
C. Slides	7	2

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Learning Activity	Volunteers*	Participants
D. B or C (no A)	0	0
E. Discussion (students)	5	3
F. Discussion (leader)	2	1
G. Individual Conference	1	0
H. Readings	2	2
I. Study Questions	4	8
J. Other	2	0

*Several subjects volunteered for morethan one activity.

Post Hoc Analysis

A follow-up inquiry in the learner input section (N=17) revealed that one S reported not having read the article at all, ten Ss reported having read it once, and six Ss reported having read it two or more times. A similar inquiry in the no learner input condition (N=17) revealed that one S had not read the article at all; seven had read it once; and nine Ss had read it twice or more (see Table 3).

Table 3
Self Reports of Reading Article

	Not At All	Once	Twice or More
Learner Input Condition	1	10	6
No Learner Input Condition	1	7	9

The observation of the mean comprehension scores within the learner input condition, when subjects were grouped by the number of activities in which they participated, invited post hoc analysis. The learner input group which participated in no additional activities had a mean acore of 8.0000 (N=7); the group which participated in one additional activity had a mean score of 9.8000 (N=5); and the group with at least two additional activities had amean score of 12.8000 (N=5). Since the F value derived from a 1x3 analysis of variance lacked significance,[4] typical data snooping techniques could not be utilized (McNemar, 1969, p. 323). On that basis, any claim for directional support, indicating that the more activities an S is involved in, the greater that S's comprehension score, is necessarily tentative.

DISCUSSION

The confirmation of the first two hypotheses isnot at all surprising. Its theoretical basis is the same as that of all traditional educational systems: Any systematic instructional procedure should increase comprehension of specific subject matter significantly more than no instruction at all.

More surprising, considering the conceptual and empirical evidence presented in the first part of the paper, was the inability to confirm the third and fourth hypotheses. Methodological problems may have contributed to the lack of significance between the comprehension and attitude scores of the learner input condition and no learner input condition. Certain of these problems were unavoidable: practical considerations precluded

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their prevention. For example, thelearner input condition might have resulted in greater comprehension scores if participation in learning activities had not been so inconvenient. Closely related to this isthe possibility that using someone other than the regular teacher to introduce the assignment may have contributed to a perception on the part of the Ss that the assignment was not a part of the course structure. It seems that the ideal learner input condition (1) would require no additional class meetings, so that it would be no less convenient than the no learner input condition and (2) would be conducted be the course instructor, so that it would retain all the authenticity of any other assignment. Unfortunately such operationalization was not practical in this situation.

The fact that no Ss took advantage ofthe self-pacing opportunity afforded the learner input condition may indicate that this component of learner input was not operationalized for maximum effectiveness. The absence of an incentive to finish the assignment early and the inconvenience entailed may have negated the positive effects which self-pacing has been reported to have on comprehension andattitude toward task.

Another methodological consideration concerns the students' introduction to the experimental treatment. Due to a communication breakdown between the experimenter and the course instructor, students were informed that their performance on this assignment would not affect their grades. Though a potentially devastating circumstance, participation records indicate that this introduction did not totally invalidate subsequent results. Perhaps students' prior experience with professors and grades andthe fact that the experiment was introduced extremely early in the semester (during the second class meeting), prompted the subjects to take the assignment relatively seriously. It should be noted that Ss in both experimental conditions did operate under the same instructions.

Another possible explanation for the lack of a significant difference in the effects of learner input and no learner input is the possibility thatthe effects of learner input did not emerge within the context of this experiment. Learner input effects may only become significant in longer time periods or with more complex tasks. Perhaps the advantages of increased learner decision-making are long-term and appear after an extended learner input experience. Or perhaps learner input is more effective with learner tasks of a higher order than simple comprehension; for example, application, analysis, synthesis, or evaluation. Only future research can establish the validity of these postulations.

There is also a possibility that the failure to confirm the third andfourth hypotheses lies in the conceptualization and operationalization of learner input. Since this study was somewhat unique in that it attempted to ascertain, experimentally, the combined effects of all three components, there is a slight possibility that an interaction among the components of learner input (unique to the experimental situation) was responsible for the results. This possibility was not considered a priori; therefore, no method of ascertaining this interaction is available.

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[4]The 1x3 Analysis of Variance among Ss with no activities, Ss with one activity, and Ss with two or more activities did not indicate a significant main effect. It yielded a value of 2.574 ($p<.05$, $F=3.74$, $df=2,14$).

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The participation data shows that, within the learner input condition, subjects were not at all reticent about volunteering for alternative learning activities. No one specific activity was required, but over half of the subjects volunteered for group activities which required time outside of class. This volunteering indicates that the learner input manipulation was received fairly well by the subjects in the learner input condition.

However, it is interesting to note that the identity and number of subjects changed somewhat when the time came for actual participation. Apparently, after volunteering, subjects perceived the activities as being either more or less convenient and/or valuable than they had before. Again, the motivation factor, coupled with required output, may have influenced these decisions.

Information from Table 3 indicates that the number of subjects actually reading the article did not differ from the learner input group to the no learner input group, and that at least one third of the subjects from each group read the article twice or more. From that observation, it may be assumed that most learner input subjects used thelearning activities as reinforcement of the subject matter within the article and not as a replacement of it. This information also indicates that the subjects did cooperate with the assignment, even though they were aware that it would not affect their course grades. However, the potential for error in this self reporting measure of reading activity is considered rather high.

Finally, there is an indication that (within the learner input group) the subjects who voluntarily participated in two or more learning activities tended to have better comprehension scores than those who only read the article. It is impossible to tell from the data whether this relation is a function of the individuals' motivation, of their increased participation, or both.

IMPLICATIONS FOR FUTURE RESEARCH

Perhaps the greatest contribution of this study to educational and and communication theory is thebody of research questions which it generates. As has been indicated previously, few prior studies have operationalized learner input in precisely this way, and few studies have investigated the effects of similar instructional approaches within the experimental paradigm. So this study was somewhat unique, in that it attempted to study the effects of an instructional approach which was currently very popular but had only a modicum of empirical support. The results of this study indicate no reason to abandon research into learner input. In fact, they suggest at least five promising avenues for future research of the concept. Each of these avenues will be discussed independently: (1) replications of the current study; (2) the nature of the effects of learner input; (3) individual differences and learner input; (4) the conceptualization of learner input; and (5) speech communication education and learner input.

Replications of the Current Study

Given the inherent limitations of this study and the methodological problems which developed during the experiment, replications seem to be in order.

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Results of the study arenot immediately generalizable to practical instructional situations because of the limited population and thenarrow learning task involved. Replications with Ss drawn from various population samples would establish experimental evidence as to the effectiveness of learner input within various grade and age levels.

Still other partial replications could be fruitfully conducted with various learning tasks which involve levels of learning beyond simple comprehension--application, analysis, synthesis, evaluation, and perhaps even creative thought. Further replications of this study can also investigate various combinations of these levels of learning.

Other partial replications could investigate the effectiveness of various learning modalities (dyadic versus small group versus lecture, reading versus listening, and so on).

Needless to say, any experimenter attempting a replication of this study would do well to attend to the methodological problems discussed above. Ideally, the learner input condition would be perceived by the student (or subject) as areasonable learning situation, imposing no great inconvenience (or threat) beyond that from more traditional approaches. Also, any future replication should, by all means, include provisions for incorporating the experimental conditions into the course as a regular assignment for which the subjects would receive grades. Finally, the regular instructor would, ideally, handle all the experimental treatments.

Though serious questions concerning the operationalization of the dependent variables did not arise during the experiment, replications of the study would be valuable if their results could be generalized to a number of comprehension and attitude measures. Possible investigation of additional dependent variables is discussed below.

Nature of the Effects of Learner Input

The results of this study are puzzling, compared to previous conceptual and empirical studies concerning the effects of learner input. Setting methodological problems aside for the moment, two potential explanations of this discrepancy come to mind.

There is a possibility that the effects of learner input on comprehension and attitude toward task do not emerge (1) in such a short time or (2) with such a simple task. In addition, the comprehension and attitude effects of learner input may be cumulative. With a series of complex tasks or during a longer time span, the effects might be significantly different. Future investigations might productively focus on this possibility.

Still other limitations of this study concern its restriction to speech communication subject matter. Besides replicating this study in other discipline areas, experimenters might attempt to establish which subject matter areas or disciplines respond most favorably to learner input and which do not readily adapt to student decision-making.

Another possibility is that learner input approaches may not significantly affect comprehension or attitude toward task, but do affect other educational outcomes. Some instructors now using forms of learner input claim that it teaches decision-making skills, thus promoting student artonomy. Future research might well seek to substantiate those claims experimentally. Intuition leads to further speculation that such input could affect personality variables. If, as the results of this study indicate, learner input achieves

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essentially the same comprehension and attitude effects as no learner input, and if prescientific thought claims significant additional effects, then the concept merits further investigation. Evidence concerning both positive and negative effects of learner input would be a vital contribution to the formulation of instructional theory and practice.

Individual Differences and Learner Input

Recent interest in learner input has closely paralleled emphasis on individualization, or the attempt to handle effectively a wide range of individual differences in one classroom (Dell, 1972; Lewis, 1971). Therefore, an obvious avenue for future research would include an attempt to link learner input effects to individual differences. Learner input is, in part, an attempt to adapt to individual differences. Ironically, that very attempt to adapt to individual differences may have negative effects on certain individuals. The results of this study suggest that different people react differently to the learner input situation. Some subjects were motivated to participate in a greater number of learning activities than others, and those who were motivated to take part in two or more activities tended to have better comprehension scores than those who participated in no activities beyond reading the article. Future investigations might attempt to correlate individual reactions to learner input situations (which lead to motivation or achievement) with personality variables (such as dogmatism or self esteem). Perhaps various degrees of learner input may be found to be effective with various individuals. Ideally, future research would establish optimum levels of learner input for various individuals, according to their capabilities and personalities.

Conceptualization of Learner Input

Since the central concept of this study had not been previously operationalized in exactly this way, a closer analysis of the components of learner input might prove valuable to future researchers.

A review of the literature indicates that the use of behavioral objectives has more solid empirical support than either of the other components. Perhaps future researchers would do well to investigate the independent effects of the other two components, alternative learning activities and self-pacing opportunities.

Studies establishing the independent effects of each of the components are generally not experimental, but descriptive (University ofTexas Dental Branch, 1971; Education USA, 1968). The possibility that the use of all three components within the experimental paradigm might cause an unidentified interaction among the components which in turn, keeps the predicted effects from materializing, was discussed previously. Future researchers might profitably investigate the possibility of interaction among these three components and their relative effects on selected dependent variables.

Perhaps, with certain age groups, certain tasks, or certain individuals, a single component would be more effective than a combination of all three components. This possibility leads to the conclusion that learner input isnot an all-or-nothing proposition. There may be degrees of learner input. Future research can conceivable establish guidelines for the most effective use of differential oppoutunities for learner input. With such guidelines, an instructor might consider task characteristics and student characteristics before formulating a sequence including the optimum amount

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of learner decision-making. Such planning would be of obvious benefit to practical instruction.

Speech Communication Education and Learner Input

Each of the research suggestions proposed in this chapter could be implemented with the speech communication classroom. With such research will come the ability to make valid statements concerning the efficacy of learner input in all levels and with all subject matter. Ideally, through such research, speech educators can discover the advantages and limitations of learner input within the speech communication classroom.

Beyond the pedagogical value, such research will shed light on important variables within the communication process. Since learner input is essentially an attempt to facilitate two-way communication within the classroom, it seems that research into learner input can be valuable to the science of communication as well as to general education.

Conclusion

Although learner input seems to hold considerable promise for the field of educational research, its potential contribution to the more general science of communication is not insignificant. With the specification of the advantages and disadvantages of learner input will come one more tool with which to build an effective communication situation in the classroom. This study is but one step in that direction.

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